

ORIGINAL  
FILE

ORIGINAL +6

RECEIVED

JUN 21 1992

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of

Request of

FREEMAN ENGINEERING  
ASSOCIATES, INC.

For Award of a  
Pioneer's Preference

Docket No. ET92-100

To: The Commission

**REQUEST FOR PIONEER'S PREFERENCE**

Freeman Engineering Associates, Inc. ("Freeman"), pursuant to Rule Section 1.402, hereby requests the award of a Pioneer's Preference ("Request"), in connection with its plans to provide innovative Enhanced Paging Service ("EPS") in the New Orleans and Baton Rouge, Louisiana Metropolitan Statistical Areas (MSA)<sup>1</sup>. The grant of Freeman's request is consistent with the criteria set forth in the Commission's Establishment of Procedures to Provide a Preference, 6 FCC Rcd 3488 (1991), Reconsideration Granted in Part, 7 FCC Rcd 1808 (1992).

---

<sup>1</sup> The issues raised by this request are already before the Commission in connection with the January 23, 1991 Petition for Rulemaking filed by Telocator in RM-7617. Therefore, consistent with Section 1.402(a) of the Rules, a separate petition for rulemaking is not required.

No. of Copies rec'd  
List A B C D E

0+6

## **I. Overview**

1. Freeman's proposal satisfies all of the Commission's criteria for the award of a pioneer's preference. Freeman has developed an innovative proposal for a new service which is not currently available, which will enhance and supplement existing radio communications services and which will do so in a spectrally efficient, cost-effective manner.

## **II. Freeman's Background**

2. Freeman was established in 1982 to manufacture and sell improved mobile telephone service (IMTS) and paging switching equipment for distribution both in the United States and worldwide. It is a Louisiana corporation and its stockholders are W. Harrell Freeman, and brothers, Lawrence D. Garvey and James D. Garvey. The Garvey brothers are also the principals of Radiofone, Inc., a radio common carrier and cellular service provider. Freeman's three principals are well known to the non-wireline communications industry having continually pioneered the leading edge of technology. In 1959, the Garvey brothers pioneered the second radio common carrier selective radio calling system in the United States using the first equipment available of its type, manufactured by Lear Sigler and Stromberg Carlson, call sign KKT407. In 1968, Radiofone was the first RCC in the United States to install a direct-dial paging terminal that interconnected with Bell Operating Companies. This has revolutionized radio paging in this country to the extent that almost all of the pagers in the United States now are dispatched by automatic means.

3. In 1970, Radiofone installed one of the first direct-dial interconnected tone and voice paging systems in the United States. In 1972, it established the first IMTS system in the state of Louisiana and was the first RCC in the southern United States to do so. In 1976, the principals of Freeman installed the first fully automatic, trunked, portable telephone system in the country, with fully automatic unit identification and call billing

capability. This system was made possible by internal control equipment, designed and developed by Freeman. In 1978, the principals of Freeman designed, constructed and installed the first wide area paging system in Louisiana. Most significant in that was the fact that this system contained the first networking capability known to be installed in the United States. This allowed for local DID numbers in multiple exchanges. The protocol used was later turned over to the Telocator Network Protocol Committee, on which Harrell Freeman served, along with others who developed the TNPP Protocol now in use by most carriers in the United States. Presently, the original protocol developed by Freeman is in use in a system in Louisiana serving many thousands of subscribers. A conversion box has been designed and is operational which converts from this original protocol to the TNPP Protocol to connect to other systems outside of Radiofone's service areas.

4. The principals of Freeman also pioneered the introduction of digital paging and were one of the first RCCs to install a Motorola Metro 10 terminal and perform its own special modifications to add additional digital formats provided by Martin Marietta Corporation. Radiofone operated a rather extensive digital network from the very beginning of the availability of digital equipment, even prior to digital readout, when tone only radios were all that were available.

5. Freeman's principals have demonstrated a record of technical ability and accomplishments which will have a direct bearing on their qualifications to provide EPS through a pioneer's preference. They have pioneered techniques in terminal and switching system design which are in use in many systems worldwide. They have faced the challenge of designing multiple protocols into the switching systems that they supply. One of the challenges in marketing switching equipment to various RCCs and international subscribers is in the fact that multiple protocol and special accommodations must be met. The principals of Freeman have done this through the design of a switch which is both robust and versatile. The switch has been used in diverse and hostile environments, including installations from the deserts of the Middle East, to Alaska, to humid islands of

the South Pacific. Freeman was the first company to put a combined protocol system which allowed for paging and mobile telephones in the People's Republic of China.

6. Mr. Freeman was instrumental in obtaining special temporary authority from the Commission, under call sign KPD468, to make signal strength measurements, for the purpose of determining whether the Lake Pontchartrain Causeway (the longest bridge in the world, spanning some 24 miles) could be expected to receive service from cell sites to be located as proposed in the forthcoming cellular application. This innovative concept was one of the factors used in designing the cellular system which presently serves the New Orleans MSA.

7. Mr. Freeman engineered the New Orleans cellular system, and constructed it as granted, possibly the only system in the top 100 markets to be built as proposed. The original cells are still all in place, now seven years into operation. Radiofone was awarded its license through a comparative hearing with The Western Union Telegraph Company, Mid-America Cellular Systems, Inc., and a subsidiary of Graphic Scanning Corporation.

8. Having gone through the comparative process, without compromise, and building their system as proposed, and following the original plan for the duration demonstrates the technical capability of the principals. It is also believed that Radiofone has the majority share of the market, showing that the customers approve of the service and find it valuable.

### III. Freeman's Implementation Plan

#### A. The Proposed Service

9. Freeman Engineering proposes a new wide band paging service which allows the integration of multiple modes of operation on a single paging channel. Freeman has seen the need for various modes of paging, including tone plus voice, tone only, digital readout, and alpha-numeric. In addition to these, there is great demand for "E-Mail" like paging services whereby longer messages can be sent to the paging subscriber. This service would envision an extension of a LAN or public data network to transmit messages and/or data to the pager or a portable computer (i.e., laptop or palmtop).

10. Presently, most paging systems throughout the United States in urban areas are built as digital readout systems in which a telephone number or a cryptic message, up to 24 digits, can be sent. This is sometimes augmented by what is regarded as marginally acceptable service from alpha-numeric providers. Tone-voice service is generally available only in rural areas and in very few metropolitan areas. Throughout the growth of the New Orleans system, there has been steady and consistent demand for tone-voice service. It is believed that Radiofone in New Orleans is one of the largest providers of tone plus voice service in any major metropolitan area. The present method of one transmitter per voice frequency, with limited ability to simulcast due to the analog nature of the voice system, significantly limits the availability and desirability of tone-voice service. What is needed is a wider area tone-voice system that can easily be implemented, but that has high capacity so that the cost can be spread over more subscribers and thus be passed reasonably to the public.

11. This proposed service would require that the Commission allocate a series of channels, 150 KHz wide, using advanced modulation techniques. Freeman Engineering believes that sufficient flexibility in modulation specifications should be allowed in the implementation of the system so that each carrier can best serve the needs of its particular customer base. For example, in some areas demand may be high for messaging type services, and in other areas the demand may be high for tone plus voice service. It is proposed that the voice message be digitized, compressed and transmitted in digital form to the pager, which will decode and reconstruct the audio. It is proposed that the text messaging service be integrated in the same bit stream, along with conventional digital readout and tone alert type services. Integrated voice mail will be an adjunct service made available to the subscriber.

12. In addition to the above, it is requested that a 56 KHz reverse channel be allocated for mobile (portable paging and computer units) and fixed units to allow for response to the incoming call by the paging subscriber. This fills a need to acknowledge the receipt of a page and send a limited response to the calling party. This channel will be

synchronized with fixed station transmitting equipment so that acknowledgments and short messages from the individual pagers can be properly handled under control of a central computer. The base stations will simulcast over a large geographical area. Due to lower power of the talk back response device carried by the subscriber (integrated into the paging receiver), multiple satellite receivers will be required. Statistically, the responding units will be expected to be spread out over a large geographical area. Additional throughput can be controlled on the channel such that multiple receiving units transpond simultaneously over the geographic area. Tables will be kept in a centralized computer at the base station to know which units will be probable candidates for multiple response. Due to the mobile nature of the response units, these tables must be updated each time the unit has responded to a message so that the system will know where to expect it the next time a call is placed. It is inevitable there will be some collisions due to units being in the same area when they are not expected to be. This will be resolved by re-transmission. For example, if the units are called and a garbled message is received, then only one unit will be called in the next time slot (along with others) in order to resolve the two units that collided in the same geographical area.

13. Freeman Engineering also proposes that a series of 56 KHz channels also be allocated for base station as well as mobile use. This will allow packet switching technology to be used in conjunction with the paging system for wireless input of paging calls. Freeman Engineering proposes that this allocation of packet channels be authorized for both fixed and mobile use. It is contemplated that the main base station of the carrier cover a large geographical region and have satellite receivers to receive the lower powered mobile and portable units. The spectrum will be conserved in this system by allowing all units to operate in a controlled orderly fashion on one frequency. Wider bandwidth will increase system throughput with greater efficiency than individual channels that would be required currently. Paging calls could be input from the field from various portable units, thus allowing data to be available from a supervisor in the field to his subordinates rather quickly, without the need for centralized dispatch currently required. There is an identified

need for this, especially among the service sector and small businesses. There is also a need for the ability to input pages. It is proposed that flexibility be allowed so that this packet channel can be used either standalone or in conjunction with the wide band channel.

14. Mr. Freeman serves on the Telephone Access Board of the Louisiana Commission for the Deaf. In this capacity he sees the need for the deaf segment of the public to communicate. This packet portion of the proposal recognizes that need in that portable packet TDD equipment will allow response from the field when responding by regular phone line may be impossible or impractical. Numeric response from the PSTN is generally available but data response is not. This proposal would allow for both, depending on the portable input device.

**B. Area for Which the Preference is Sought**

15. Freeman seeks a pioneer's preference for the provision of enhanced paging service with the public switched telephone network in the New Orleans and Baton Rouge, Louisiana MSA's. However, given the fact that the Commission has yet to establish the geographical subdivisions for which preferences will be awarded, Freeman reserves the right, should it be granted a preference, to select an area at that time.

**C. Conflicting Licensing Rules**

16. Freeman is unaware of any conflicting licensing rules that would restrict its eligibility for a pioneer's preference for the provision of enhanced paging service.

#### **IV. Technical Feasibility**

17. Freeman believes that this proposal is technically feasible using some current technology, and some technology yet to be applied, but technology that is within the knowledge of the industry.

18. Freeman Engineering itself is able to manufacture the control equipment described herein. It already has experience with digitized and compressed voice and in multiplexing data and voice in a common bit stream. The switching system can accommodate inputs from data as well as voice and convert them to the appropriate protocols for transmission. Freeman has had discussions with the manufacturer of simulcast equipment and has been assured by the manufacturer that the simulcast control equipment that they manufacture can accommodate 150 baud transmitting equipment. The manufacturer told Freeman that the limiting factor from their standpoint would be the transmitter at this bit rate. Therefore, the simulcasting over a broad area is possible. No transmitters are currently type accepted for the emission required, however, the technology readily exists to apply to the 930-931 MHz frequency range in order to build new or modify existing transmitters for the modulation bandwidth necessary. Various packet switching formats are in the public domain to handle the 56 KHz channel. Antenna transmission lines and accessories are off-the-shelf items. The paging, laptop, and fixed station equipment must be designed and manufactured for this service. The technology necessary to do this is within the knowledge of the industry, and Freeman feels sure that several paging manufacturers will step forward to manufacture the equipment if the proposed service is authorized by the Commission. Therefore, this proposed service is technically feasible, using existing technology of Freeman and others, and applying existing know-how to produce the subscriber equipment.



## V. Innovation of Proposal

19. In its Report and Order in General Docket Number 90-217, the Commission stated that when it is making a determination as to whether a preference is warranted, it will look at whether the entity demonstrates that it has developed an innovative proposal that leads to the establishment of a service not currently provided or a substantial enhancement of an existing service, provided that the rules adopted for the service or existing service are a reasonable outgrowth of the proposal and lend themselves to grant of a preference and a license to the pioneer. Report and Order, 6 FCC Rcd 3488, 3494 (1991). The Commission also noted that an innovation could be added functionality, a different use of the spectrum than previously available, or a change in the operating or technical characteristics of a service. The Commission indicated that it would consider carefully technologies that yield efficiencies in spectrum use, speed or quality of information transfer, spectrum sharing or technologies which significantly reduce costs to the public.

20. Freeman's proposal to provide EPS meets the Commission's criteria by justifying the award of a pioneer's preference, in the following respects: Freeman's proposed service represents a substantial enhancement of existing paging services by proposing new and innovative services which will allow total integration of tone alert, digital readout, voice, alpha-numeric, and extended text messaging. It will add functionality which is presently not available to accomplish this. The proposal necessitates a reallocation of frequencies to make spectrum available for wide band paging technology. It proposes changes in the rules to allow broad band spectrum techniques to be used. It proposes to conserve frequency resources in the form of using broad band modulation rather than today's discrete frequency assignments with the necessary interleaving guard band requirement to avoid adjacent channel interference. It is believed that the widespread availability of tone plus voice paging, coupled with the new storage technology which allows a voice pager to store and repeat the voice page, will be of benefit to the

public and will open new uses for portable paging receivers. The acknowledgment of receipt of the page will fill a need that exists that cannot be filled by present paging systems. The integrated data feature will allow a single paging device to take voice, numeric or text messages, with acknowledgment. The packet channel will allow portable as well as fixed dispatch to paging receivers independent of the landline network, thus improving the reliability of the systems during emergencies that affect the landline trunk. The packet channel will also allow paging from portable TDD equipment, thus providing a service to the hearing impaired that is not now available.

21. Presumably, various manufacturers will market the equipment necessary for the provision of this service. However, as the facts set forth demonstrate, Freeman Engineering is uniquely qualified to design, manufacture and market the equipment needed to provide the services described herein.

## VI. Conclusion

22. The grant of a pioneer's preference to Freeman is in the public interest because its proposal involves the provision of a new and innovative service to current and future subscribers and because Freeman has demonstrated the technical feasibility of implementing new technology. In addition, Freeman's proposal will service the public interest by furthering the development of paging technology throughout the country by increasing spectral efficiency and providing the public a cost effective service which supplements and in some cases may replace paging and messaging services.

23. In light of the foregoing, Freeman requests that the Commission grant the instant request.

Respectfully submitted,

FREEMAN ENGINEERING ASSOCIATES, INC.

By:   
Officer

Dated: June 1, 1992

Of Counsel:

Blooston, Mordkofsky, Jackson & Dickens  
2120 L Street, N.W.  
Washington, D.C. 20037

Tel. (202) 659-0830